

## CLAIMS

1. Superconducting cable comprising at least a superconducting conductor and a cryostat positioned externally to the superconducting conductor, said cryostat including a thermal insulation enclosed between an inner and an outer coaxial tubes, wherein a protecting element is provided between the superconducting conductor and the inner tube of the cryostat.
2. Superconducting cable according to claim 1 wherein the protecting element provided between the superconducting conductor and the inner tube has a substantially constant thickness.
3. Superconducting cable according to claim 1 wherein the protecting element has a smooth internal surface.
4. Superconducting cable according to claim 1 wherein the protecting element has a firm and flexible external surface.
5. Superconducting cable according to claim 1 wherein the protecting element comprises one or more layers.
6. Superconducting cable according to claim 5 wherein the protecting element is made of two layers, the inner being smooth and the outer being firm and flexible.
7. Superconducting cable according to claim 1 wherein the thickness of the protecting element is equal or greater than about 0.2 mm.
8. Superconducting cable according to claim 7 wherein the thickness of the protecting element is comprised between about 0.2 mm and about 3 mm.
9. Superconducting cable according to claim 8 wherein the thickness of the protecting element is comprised between 0.4 mm and 1 mm.
10. Superconducting cable according to claim 1 wherein the protecting element comprises a material selected from polymeric materials, metals, carbon paper, kraft paper, and combination thereof.

11. Superconducting cable according to claim 10 wherein the protecting element is made of polymeric material.
12. Superconducting cable according to claim 11 wherein the protecting element is made of polytetrafluoroethylene.
- 5 13. Superconducting cable according to claim 10 wherein the protecting element is made of copper.
14. Superconducting cable according to claim 5 wherein the layer(s) of the protecting element comprise(s) at least one tape, wire, sheet or combination thereof.
- 10 15. Superconducting cable according to claim 14 wherein the at least one tape, or sheet is positioned with juxtaposed windings or rims on the superconducting conductor.
16. Superconducting cable according to claim 1 which has a clamped head configuration.
- 15 17. Superconducting cable according to claim 1 which is cooled with liquid nitrogen at a temperature typically of from about 65 to about 90 K.
18. Superconducting cable according to claim 1 wherein the superconducting material is an oxide of bismuth, lead, strontium, calcium, copper.
- 20 19. Method for protecting a superconducting cable comprising at least a superconducting conductor and a cryostat positioned externally to the to the superconducting conductor, said cryostat including a thermal insulation enclosed between an inner and an outer coaxial tubes, from the mechanical damages to the superconducting material of the superconducting conductor due to the contact with the inner tube of the cryostat, which comprises the phase of providing a protecting element between the superconducting conductor and the inner tube.
- 25 20. Current transmission/distribution network comprising at least one superconducting cable comprising at least a superconducting conductor and a cryostat positioned externally to the to the superconducting
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